

## **ADAPTIVE VISUAL OCCUPANT DETECTION AND CLASSIFICATION SYSTEM**

### **ABSTRACT OF THE DISCLOSURE**

A vision-based vehicle occupant detection and classification system includes a camera mounted in the vehicle interior to capture low resolution images of the seating area. Image processing algorithms account for lighting, motion, and other phenomena. A spatial-feature matrix numerically describes the content of the image. This descriptor is the result of a number of digital filters being run against a set of sub-images, derived from pre-defined window regions in the original image. This spatial-feature matrix is used as an input to an expert classifier function, which classifies this image as best representing a scenario in which the seat is (i) empty, (ii) occupied by an adult, (iii) occupied by a child, (iv) occupied by a rear-facing infant seat (RFIS), (v) occupied by a front-facing infant seat (FFIS), or (vi) occupied by an undetermined object.